

# **ADSL COMMUNICATION SYSTEM HAVING ECHO CANCELLER AND METHOD FOR DOWNLOADING FILTER COEFFICIENT OF THE ECHO CANCELLER**

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## **ABSTRACT OF THE DISCLOSURE**

The present invention provides an asymmetric communication system having an echo canceller and a method for downloading a filter coefficient to the echo canceller. The echo canceller is a kind of a finite impulse response (FIR) filter for calculating a correlativity between an echo input signal and an echo output signal to generate a filter coefficient. The echo canceller includes a delay line block for delaying an echo input signal for a predetermined interval to generate a delay signal, a filter coefficient table block for sequentially shifting filter coefficients which are sequentially stored in a shift register, and a multiplication and accumulation block for multiplying and adding the delay signal of the delay line block by a filter coefficient that is an output of the filter coefficient table block to generate an echo-cancelled echo output signal. The filter coefficient has the shift rate ratio between the RT mode to the CO mode of the asymmetric communication system. According to the invention, the hardware of an interpolation filter and a decimation filter are maximally shared between EC circuit operation in the CO mode and the RT mode of the system. A DSP adds a controllable delay function to perform an echo-

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canceling operation only for the most dominant channel, not an entire channel. Thus, the hardware structure of the echo canceller is simplified.